Federal Aviation Administration

# GBAS: Quick Facts

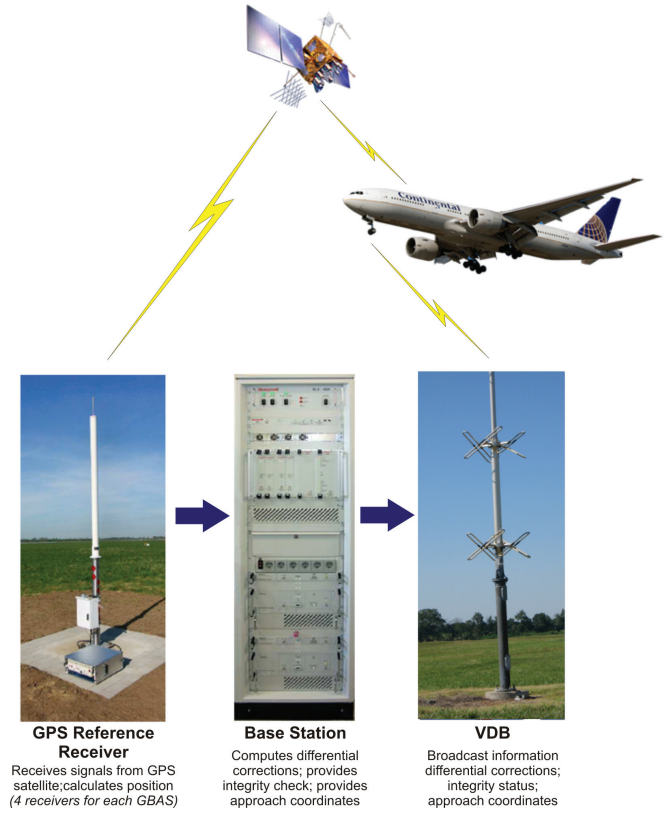
The Ground-Based Augmentation System (GBAS) is a ground-based augmentation to Global Positioning System (GPS) that provides a very precise navigation service for an airport and surrounding area (service area extends to about a 20-30 mile radius around the airport).

## Current and Future Benefits of GBAS

- Yields the extremely high accuracy, availability, and integrity necessary for Category (CAT) I, II, and III precision approaches.
- Supports departure procedures, guided missed approaches, and terminal area operations with flexible, curved approach paths.
- One GBAS can provide multiple runway and terminal area coverage.
- The demonstrated accuracy of GBAS is less than 1 meter in both the horizontal and vertical axis.
- Can increase the efficiency of arrival and departure operations and runway capacity by improving access to airports during extremely low visibility operations.
- Can eliminate capacity constraint due to Instrument Landing System (ILS) critical areas.
- Can support offset landing thresholds.
- Provides a navigation solution that supports the most demanding Required Navigational Performance (RNP) requirements.
  - Supports precision missed approaches at a lower RNP than may otherwise be achievable.
  - Aids in the transition to more advanced navigation capability (RNP/RNAV) by providing high-precision terminal area navigation services, continuous descent approaches (CDAs) and curved-segmented approaches in extremely low visibility conditions & supporting fuel efficiency and noise abatement initiatives.

## How is GBAS Important to the Future?

- GBAS is identified in the NextGen Implementation Plan as an enabler of operational capabilites that will increase flexibility in the terminal environment. GBAS provides precision landing service in low visibility conditions.




- The Operational Evolution Partnership (OEP) identified GBAS as one of the enabling technologies that directly supports the transformation of the national airspace.
- GBAS is cited as a promising solution in the New York/ New Jersey Flight Delay Task Force Report (December 6, 2007). The report recommends accelerating the development of GBAS.
- Several airlines have already taken steps to purchase GBAS-capable aircraft in anticipation of the GBAS CAT I certification.

**Ground-Based Augmentation System**

# Ground-Based Augmentation System

## GBAS Implementation in the U.S.

- GBAS will be implemented initially as a CAT I precision approach landing system.
- Prototype GBAS stations are installed in the U.S. in Memphis, Atlantic City, Cedar Rapids, Minneapolis, Chicago, Seattle, Moses Lake and Guam. In addition, a new GBAS facility will be installed in Newark in 2009.
- GBAS CAT I stations will be installed under FAR Part 171 as non-Federal systems.
- GBAS CAT II/III requirements definition and international harmonization are in progress.
- The decision on FAA's GBAS CAT II/III acquisition plans is scheduled for 2012.

## GBAS Avionics and Aircraft Equipage

***Avionics*:*** Rockwell Collins Multi Mode Receiver (MMR) GNLU 925 and 930; Thales Multi Mode Receiver, Honeywell INR.
***GBAS Aircraft Equipage*:*** Boeing 737NG, Boeing 747-8, Boeing 787 Dreamliner (over 50 Boeing customers with over 1,000 aircraft orders), GBAS is available for forward fit on all Airbus Aircraft A320 Family, A330/340 and 380.
***GBAS-Equipped Air Carriers:*** FedEx, Continental, Qantas, TUIfly, Sonair, Air Berlin, and Air Vanuatu. There is a strong increase in airline interest - both nationally and internationally.

** Reflects current and ongoing approvals*

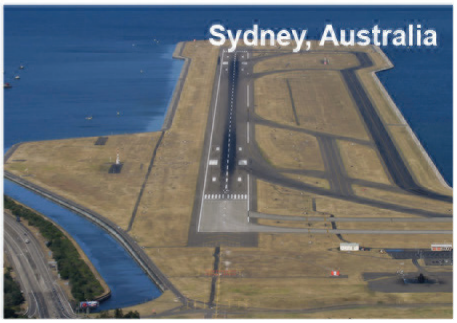
## GBAS International

- Many nations are starting to transition from GBAS research to GBAS implementation.
- Multiple companies are researching and/or developing GBAS (Honeywell, Thales, Lens, and NPPF Spectr).
- FAA and EUROCONTROL are working jointly on the implementation of GBAS.
- FAA cooperative agreements for GBAS with Australia, Brazil, Chile, Germany, and Spain.
- GBAS prototype stations have been installed internationally in Brazil, Spain, Germany, Italy, France, Australia, and Russia, with new stations also being installed in India.










**http://gps.faa.gov**

*as of 08/16/2010*